

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 17 NOV 2005

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Applicant's or agent's file reference P64127PC00		<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416
International application No. PCT/EP2004/004130		International filing date (day/month/year) 15.04.2004		Priority date (day/month/year) 17.04.2003
International Patent Classification (IPC) or national classification and IPC C08F4/04, C07D233/24, B65D77/02				
Applicant TEMSA INTERNATIONAL INC.et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 9 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input checked="" type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand  29.07.2005		Date of completion of this report  18.11.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer  Parry, J  Telephone No. +31 70 340-1032		



**INTERNATIONAL PRELIMINARY REPORT  
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International application No.  
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**Box No. I Basis of the report**

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1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1-13 as originally filed

**Claims, Numbers**

1-16 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 10-14

because:

☒ the said international application, or the said claims Nos. 10-14 relate to the following subject matter which does not require an international preliminary examination (specify):

**see separate sheet**

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

☐ no international search report has been established for the said claims Nos.

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See separate sheet for further details

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**Box No. IV Lack of unity of invention**

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1. ☐ In response to the invitation to restrict or pay additional fees, the applicant has:
- ☐ restricted the claims.
  - ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☐ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is
- ☐ complied with.
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-9,15,16 .

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-9,15,16
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-9,15,16
Industrial applicability (IA)	Yes: Claims	1-9,15,16
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

**INTERNATIONAL PRELIMINARY REPORT  
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**Box No. VIII Certain observations on the international application**

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The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

**see separate sheet**

**Re Item III**

**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

The Applicant paid for all search fees but has requested in response to form PCT/IPEA/405 that only invention group 1 be examined, thus:

1. the subject matter of claims 1-9 and 15-16 which differs from D1 insofar as it relates to water soluble containers

The other subject matter pertaining to invention group 2 (see BOX IV) is not examined here.

**Re Item IV**

**Lack of unity of invention**

The present application is found to contravene the requirements of unity of invention according to Art. 3(4)(iii) PCT, Art. 17(3)(a) PCT and Rule 13 PCT for the following reasons:

the general concept underlying the claims of the present application is the initiation of polymerisation through the dissolution of a container comprising an initiator in the polymerisation system according to present claim 10 (feature F 1). However, this concept is anticipated by US-A-3902596 ((D1) see ISR) which discloses a package containing polymerization initiators which is added to a resin formulation containing vinylic monomer. Said package comprises a thin-walled polystyrene plastic envelope that is soluble in the resin formulation. The anticipating character of this disclosure resides in the packaging which is soluble in the resin. Thus the objective problem of the present application of proposing a further method in addition to that of D1 of bringing initiators into contact with polymerisation systems is characterised by providing an initiator delivery system for aqueous olefin polymerisation. Present claims 1-9 and 15-16 solve this objective problem by means of special technical feature 1 which is a water soluble container. This new structural feature has nothing in common with the prior art. Thus the present application consists of two inventions:

1. Group 1: the subject matter of claims 1-9 and 15-16 which differs from D1 insofar as it

relates to water soluble containers (special technical feature 1).

2. Group 2: the subject matter of claims 10-14 excluding the subject matter of group 1.

Both these groups above are linked by the common concept as defined by feature F 1, however, in the light of D1 this feature is not special and there is therefore no single general inventive concept (Rule 13.1 PCT).

Since special technical feature 1 above differs from group 2 in that it does not lead to the same effect, the technical features of groups 1 and 2 are not corresponding. Hence, no same or corresponding special technical features can be identified amongst the different inventions 1-2 that can link them (Rule 13.2, PCT). Thus, the requirements of Rule 13.1 and 13.2 PCT are not met, and the application lacks unity of invention.

According to Art. 17(3)(a) PCT, a search report has been established for the invention first defined in the claims, namely the above-mentioned Group 1.

#### **Re Item V**

#### **Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

The following documents (D1-D2) will be referred to (see the ISR for the relevant passages):

D1: US-A-3 902 596 (MCVAY MALCOLM SCOTT C) 2 September 1975 (1975-09-02)

D2: EP-A-0 668 098 (OTSUKA KAGAKU KK) 23 August 1995 (1995-08-23)

1. The subject matter of claim 1-9, and 15-16 of the present application is not considered inventive for the following reasons: D1, which is considered to be the closest prior art, discloses a package containing explosively decomposable polymerization initiator catalysts, such as organic peroxide catalysts, to be added to a resin formulation which contains vinylic monomer, comprises a thin wall polystyrene plastic envelope which is soluble in the resin formulation (see also, for example, col.3, l.33-41 where this solubility

aspect of the container is clearly disclosed). The subject-matter of claims 1-9, and 15-16 essentially differs in that a water soluble container replaces the resin-soluble one of D1 (feature 1) and this container holds a water-soluble azo-polymerisation initiator instead of the peroxide suspensions (pastes of benzoyl peroxide (see col. 2, l.1-10) in di-octyl phthalate (see eg 1; eg 4: col.8, l.41-44) of D1 (feature 2). Azo-polymerisation initiators, by virtue of the azo-groups, are also sensitive reagents liable to rapid release of dinitrogen on decomposition. The technical effect of feature 2 has not been demonstrated over D1 so the objective problem to be solved in regard to feature 2 can only be formulated as to provide alternative polymerisation initiators. The technical effect of feature 1 has been shown in the worked example to lead to the dissolution of the container in aqueous solutions resulting in the initiator being brought into contact with the monomers to be polymerised and thus initiating polymerisation. A further technical effect of feature 1 is claimed to be that in emulsion polymerisation processes, the dissolved components of the container remain in the aqueous phase and do not noticeably migrate to the monomer phase (bridging paragraph of p.3-p.4). The result of this is that the final polymer product is not contaminated with the container. However, there is no demonstration of this: p.13, l.8-9 states that only a few ppm of PVA from the container rests in the final polymer, but the initial loadings of PVA of the container as expressed in ppm of the polymerisation reactor contents is unknown, so that the effect of non-incorporation into the polymer product cannot be ascertained. Therefore, the objective problem can be formulated as to provide an initiator delivery system for aqueous polymerisation of olefins. The solution proposed in claims 1-9, and 15-16 of the present application cannot be considered as involving an inventive step because feature 2 is a trivial modification to make: feature 2 is described in D2, where the process for preparation of a water-soluble azo compounds of present application example is mentioned in the context of it being useful as a polymerisation initiator. With respect to feature 1, the skilled person would regard it as a normal option when faced by such an aqueous system to modify the teachings of D1 so as to provide an equivalent to D1 that would function in water. The skilled person knows from D2 that such azo-initiators are water-soluble. Hence claims 1-9, and 15-16 are not inventive. If the effect of feature 1 had been demonstrated by providing said initial reactor loadings and final loadings of PVA with respect to the polymer product, an inventive step may have been acknowledged only for a process of an aqueous emulsion polymerisation according to the first part of present claim 11, since aqueous emulsion polymerisation would be an essential feature of the invention, to be linked to the non-obvious behaviour of the



container. The other claims 1-9 mentioning the initiator system per se would, however, remain obvious in light of the prior art.

**Re Item VIII**

**Certain observations on the international application**

The following objections are made under Art. 6 (PCT):

1. Claim 5: claim defined in terms of an product which is itself defined by a process of extrusion. It cannot necessarily be ascertained that this product was in fact treated beforehand in this way.
2. Claim 9: it is unclear how one might identify compounds as being "anti-foaming agents" or "diluents" and/or distinguish them from any other components present.
3. Claim 16: it is unclear how one might identify "polymerisation initiator system manufacturing site" or a "polymer production site" and/or distinguish them from any type of site.